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Feisability Report
for the Prominence-Corona Interface proposed program

The prominence-corona interface is the layer connecting two important and very different regions of the solar atmosphere: the cool and dense prominences and the hot and diluted corona. At present, this region with very large temperature and density gradients is believed to be only a few hundred kilometers thick. As the temperature of the transition zone is high, it can be seen in the far ultraviolet region. Consequently, space observations are needed for the study of the prominence-corona transition region. Few papers were published in the past concerning the energy transport and thermal balance in this region of the prominences.

The data used for the study we proposed are the observations made by Harvard College Observatory's spectrophotometer aboard Skylab 1 satellite. The instrument produced seven simultaneous monochromatic images in different spectral lines, with 5×5 arcsec spatial resolution over a 5×5 arcmin field. Skylab observations are of good quality and were successful used by other scientists, too.

From a large amount of data, we choosed two prominences, one dense and low and the other high and diluted. The set of observations include 190 monochromatic images of 7200 pixels each. The measurements will give quantities which should be transformed in physical parameters as temperature and density. Their distribution will be obtained along the prominence structure. Similar methods were successful used. The good resolution of images permits the study of the inhomogenities in the prominences. The temporal evolution can be analysed using the sequences of images taken every 5 minutes during one orbit. At the same time the ground-based observations from Paris-Meudon Observatory are available for comparative studies.

The data were received from NASA Goddard Space Flight Center and were transformed in a useful form for working on our computers. A preliminary processing was made, in order to obtain background-free and calibrated images. For the begining it was determined for one prominence the spatial distribution of intensities and Emission Measure within the prominence-

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corona interface . The behaviour of emission measure curves was discussed in accordance with different models of subresolution structure. These results were given and published by Sorin Pojoga, research associate, at IAU Colloquium 144 "Solar Coronal Structures", held at Tatranska Lomnica, Slovakia.

Papers involving Skylab and ground-based observations of prominences and filaments were done and published before. This research is continuing the studies concerning the physics and structure of solar prominences I made with my group.

Zadig Mouradian
Principal investigator

Sorin Pojoga
Research associate